

valve causing the actuator to short and malfunction. In order to prevent such shorting, an actuator must be electrically insulated from the structure in which it is located, including the actuator's clamping apparatus and the load or orifice that the bender pushes against or contacts. For example, when a bender actuates directly against an orifice in order to control a fluid flow, either the actuator or the orifice surface is made non-conducting. For example, U.S. Patent No. 5,079,479 is directed to an actuator having a void on the bender or actuator's outer electrode. Although this void does insulate the actuator from the orifice seat, it creates an undesirable non-uniform excitation of the electroactive material which can lead to stress concentrators and possible failure. In another example, U.S. Patent No. 4,492,360, the orifice seat is made of insulating plastic. Plastics, however, have undesirable sealing properties such as a low modulus of elasticity and are subject to deformation after many cycles or repetitions. Such deformation is even more apparent when the ultra high performance actuators such as those disclosed in U.S. Patent Nos. 5,471,721 and 5,632,841 are used.